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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,896	01/29/2002	Saeid Seydnejad	9-13528-172us	3693
20988	7590	12/20/2004	EXAMINER	
OGILVY RENAULT 1981 MCGILL COLLEGE AVENUE SUITE 1600 MONTREAL, QC H3A2Y3 CANADA			LE, TRAN Q	
			ART UNIT	PAPER NUMBER
			2633	
DATE MAILED: 12/20/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/057,896	SEYDNEJAD ET AL.	
	Examiner	Art Unit	
	Tran Q. Le	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-23 is/are rejected.
- 7) ☒ Claim(s) 13 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 8-10, 14, 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Roberts (US Patent No. 5,513,029).

Regarding claims 1 and 14, Roberts discloses a method of monitoring optical performance of a Dense Wave Division Multiplex (DWDM) optical communication system in which a plurality of channels are multiplexed within an optical fiber (col. 3, lines 4-6 and col. 4, lines 4-6), the method comprising steps of: receiving an optical signal transported through a respective one of the channels (col. 3, lines 30-31 and col. 4, lines 26-28), the optical signal being a modulated by a predetermined spreading code (col. 3, lines 6-8, lines 39-44, col. 4, lines 6-11, lines 45-46, and col. 11, lines 1-6); detecting a modulation power of the predetermined spreading code (col. 4, lines 11-16 and lines 18-22); and estimating an optical power of the optical signal using the detected modulation power of the predetermined spreading code (col. 4, lines 11-16 and lines 37-40).

Regarding to claim 2, Roberts teaches that the predetermined spreading code is unique across all of the channels multiplexed within the fiber (col. 3, lines 39-51, col. 4, lines 18-22, col.10, lines 63-67 and col. 11, lines 1-6).

Regarding claim 3, Roberts also discloses the predetermined spreading code comprises a spectrally white bit sequence having a predetermined chip duration (col. 3, lines 39-41, and col. 11, lines 1-6, it is inherently known pseudorandom sequence must have a predetermined chip duration).

Regarding claims 8 and 19, Roberts further teaches the step of detecting a modulation power of the predetermined spreading code comprises steps of: converting an aggregate light beam composed of optical signals within all of the channels of the fiber into a corresponding electrical signal (col. 4, lines 32-37, lines); decomposing the electrical signal into the predetermined spreading code of the optical signal (col. 3, lines 39-43 and col. 4, lines 32-37); and measuring an amplitude of the decomposed electrical signal (col. 3, lines 32-43, col. 4, lines 32-51).

Regarding claims 9 and 20, Roberts discloses the step of decomposing the electrical signal comprises a step of multiplying the electrical signal by the predetermined spreading code (col. 3, lines 39-43 and col. 4, lines 32-37, col. 10, lines 58-67 and col. 11, lines 40-49, the step of multiplying the electrical signal by the predetermined spreading code is inherently understood as the decoding step for the pseudorandom sequence by digitally correlating the tapped optical signal with each candidate pseudorandom sequence).

Regarding claims 10 and 21, Roberts also discloses the optical signal is received as a data signal at a downstream end of the optical fiber, and the estimated optical power of the optical signal is indicative of gain/attenuation

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experienced by the optical signal within the fiber (col. 3, lines 15-29, lines 63-67, and col. 4, lines 1-3, lines 25-31).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 11-13, 22, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts (US Patent No. 5,513,029) in view of Lemus et al. (US Patent No. 6,111,676).

Regarding claims 11 and 22, Roberts discloses all the aspects of the claimed invention as set forth in the rejection to claims 1 and 14 above, except fails to teach the optical signal is received as a reflected signal at an upstream end of the optical fiber, and the estimated optical power of the optical signal is indicative of a reflection of the optical signal in an upstream direction of the fiber.

However, Lemus, in US Patent No. 6,111,676, teaches a method for detecting reflections in bidirectional multi-channel communication systems, wherein the optical signal is received as a reflected signal at an upstream end of the optical fiber (see Fig. 1 and col. 2, lines 15-21), and the estimated optical power of the optical signal is indicative of a reflection of the optical signal in an upstream direction of the fiber (col. 2, lines 15-21).

One skilled in the art would have recognized that it is easy to adapt the method of Lemus that detects reflections in bidirectional multi-channel communication systems using the measured optical power of a reflected signal to the method of monitoring optical performance of Roberts since they both provide tapping unit and performance monitoring unit at an upstream end of the optical fiber, and since such method has an advantage of determining faults in an optical link and can prevent oscillations in bidirectional optical transmission system, therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the method of detecting reflections in bidirectional multi-channel communication of Lemus to modify the method for monitoring performance of optical transmission systems of Roberts to provide a more reliable performance monitoring for the optical transmission systems.

Regarding claims 12 and 23, Roberts discloses all the aspects of the claimed invention as set forth in the rejection to claims 1 and 14 above, except fails to teach a step of estimating a distance to a point of reflection.

However, Lemus, in US Patent No. 6,111,676 discloses a step of estimating a distance to a point of reflection (col. 2, lines 23-27).

One skilled in the art would have recognized that it is advantageous to incorporate the method of Lemus for detecting reflections in bidirectional multi-channel communication systems into the system of optical performance monitoring of Roberts, since they both provide tapping unit and performance monitoring unit at an upstream end of the optical fiber, to further estimate the distance to a point of reflection based on the relative delay between the signal

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and the respective reflection in order to determine the location of the reflection without using expensive fixed or tracking optical filters. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the method of detecting reflections in bidirectional multi-channel communication of Lemus to modify the method for monitoring performance of optical transmission systems of Roberts to provide a simple faults detection system for the optical transmission systems.

5. Claims 4-7, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts (US Patent No. 5,513,029) in view of Lovell et al. (US Patent No. 5,349,606).

Regarding claim 4, Roberts differs from claim 4 in that he does not teach the step of receiving the optical signal comprises a step of: introducing a predetermined time delay to the optical signal.

However, Lovell et al., in US Patent No. 5,349,606 discloses a corresponding time delayer in the receiver of a direct spread-spectrum communication system providing predetermined time delay for the digital data of a plurality of multi-path signal components (col. 1, lines 38-58).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the time delayer of Lovell into the method of monitoring optical performance of Roberts in order to meet the autocorrelation property of the spreading code for isolating the dither signal from its cross-coupled dithers caused by SRS.

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Regarding claims 5, 6, 16 and 17, Roberts teaches that the optical signals at each distinct wavelength are modulated with distinct dither signals (see abstract); however, he differs from the claimed invention in that he does not teach the predetermined time delay is unique across all of the channels multiplexed within the fiber, and is a function of wavelength of the optical signal.

However, Lovell et al., in US Patent No. 5,349,606, teaches a corresponding time delayer in the receiver of a direct spread-spectrum communication system providing predetermined time delay for the digital data of a plurality of multi-path signal components (col. 1, lines 49-58).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the corresponding time delayer of Lovell's system into the multiplexed optical transmission system of Roberts in order to provide unique predetermined time delay across all of the multiplexed channels as a function of wavelength of the optical signal.

Regarding claims 7 and 18, Roberts differs from claims 7 and 18 in that Roberts does not disclose a difference between the respective predetermined time delays of any two channels is equivalent to at least one spreading code chip duration.

However, Lovell et al., in US Patent No. 5,349,606, discloses a corresponding time delayer providing time offset being equivalent to at least one spreading code chip duration (col. 1, lines 38-58).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the specific time delays of

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Lovell into the optical monitoring performance system of Roberts in order for each channel to have a relatively stable delay to make the copy of each spreading code be synchronized with its counterpart in the received signal.

Allowable Subject Matter

6. Claims 13 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claims 13 and 24, the prior art of record teaches the step of estimating the distance comprises steps of: converting a reflected light beam within the fiber into a corresponding electrical signal, and estimating a distance to the point of reflection based on the identified time delay. However, the prior art of record fails to teach the step of multiplying the electrical signal by a plurality of copies of the spreading code, each copy having a respective different time delay; and auto-correlating each multiplication result to identify the time delay that most closely matches a time delay of the spreading code in the reflected light beam.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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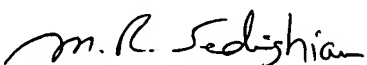
Dinu et al. (US Pub. No. 2002/0176129) is cited to show an optical performance monitor for use in an optical network using an optical autocorrelator to sample the autocorrelation function of the optical signal.

Frank et al. (US Pub. No. 2003/0035469) is cited to show an optimal linear MMSE equalizer in mobile communication system utilizing orthogonal codes covered by long pseudorandom spreading codes.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran Q. Le whose telephone number is (571)272-2046. The examiner can normally be reached on 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


M. R. SEDIGHIAN
PRIMARY EXAMINER